ov018392_01.tif (2496x3507x2 tiff)

FIG. 1

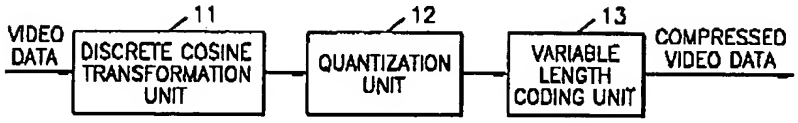
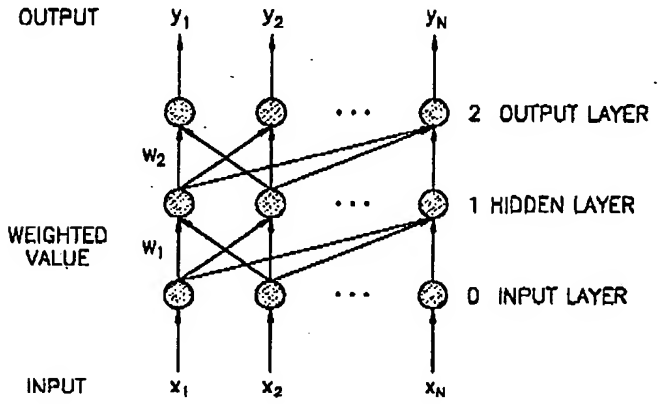


FIG. 2



BEST AVAILABLE COPY

FIG. 3

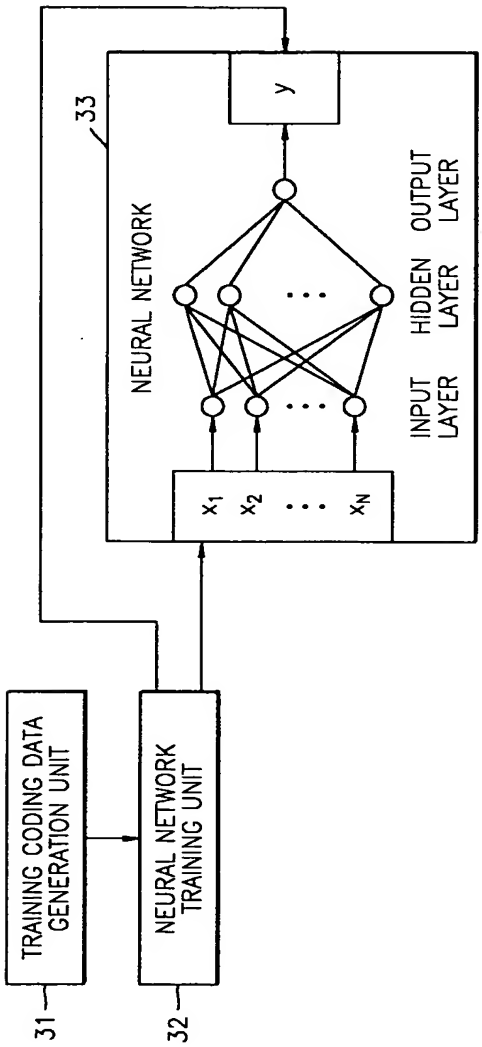

33
y
NEURAL NETWORK
INPUT LAYER
HIDDEN LAYER
OUTPUT LAYER
x_1 x_2 ... x_N
TRAINING CODING DATA GENERATION UNIT
NEURAL NETWORK TRAINING UNIT
31
32

FIG. 4

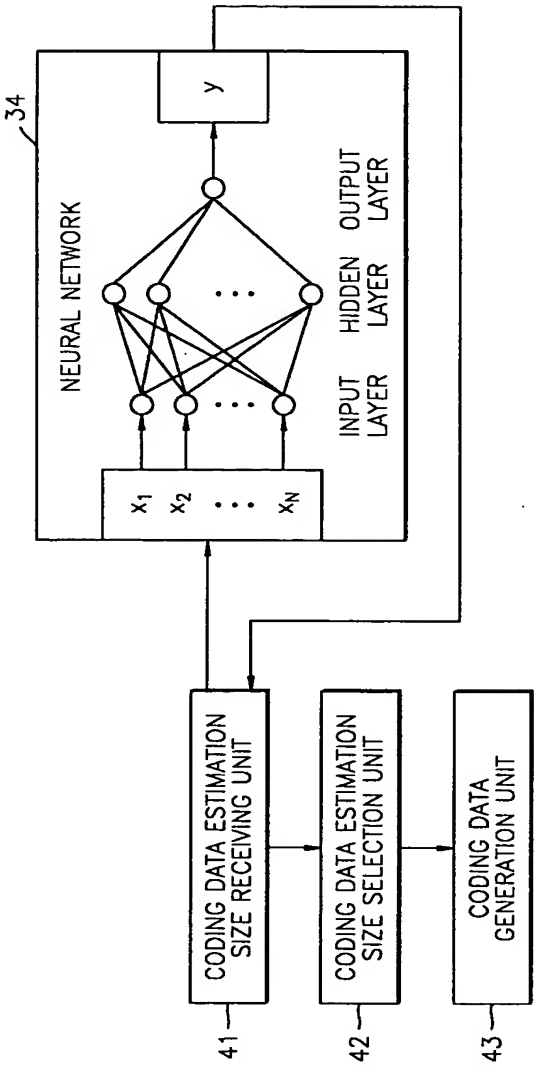

34
NEURAL NETWORK
y
INPUT LAYER
HIDDEN LAYER
OUTPUT LAYER
x_1
x_2
x_N
CODING DATA ESTIMATION SIZE RECEIVING UNIT
CODING DATA ESTIMATION SIZE SELECTION UNIT
CODING DATA GENERATION UNIT
41
42
43

FIG. 5

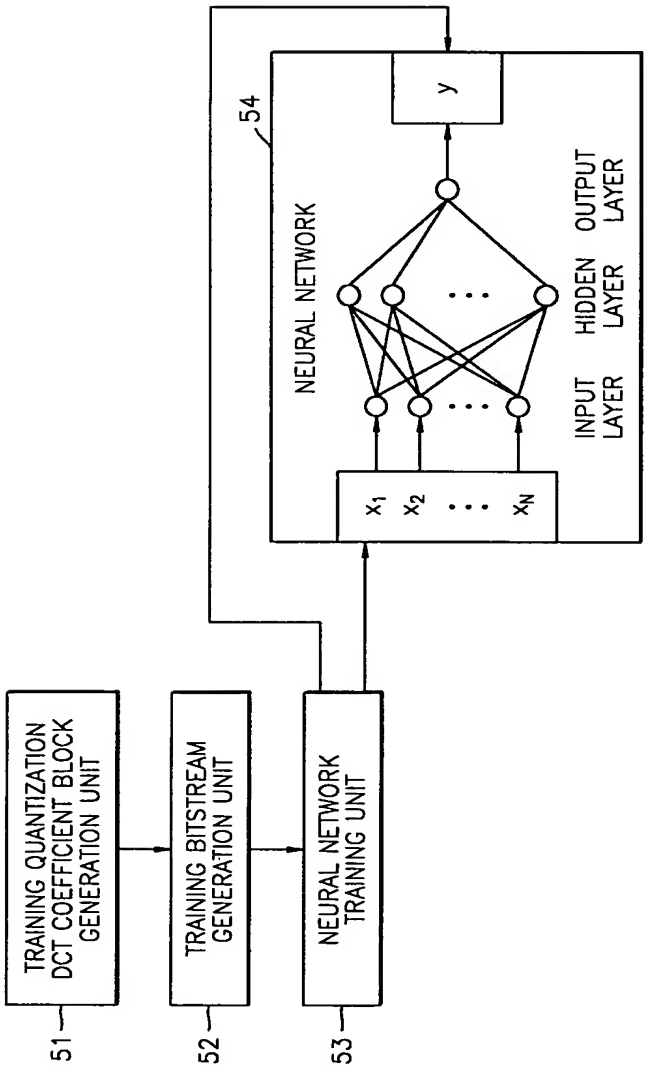

TRAINING QUANTIZATION DCT COEFFICIENT BLOCK GENERATION UNIT
TRAINING BITSTREAM GENERATION UNIT
NEURAL NETWORK TRAINING UNIT
51
52
53
54
NEURAL NETWORK
INPUT LAYER
HIDDEN LAYER
OUTPUT LAYER
y
x1 x2 ... xN

FIG. 6

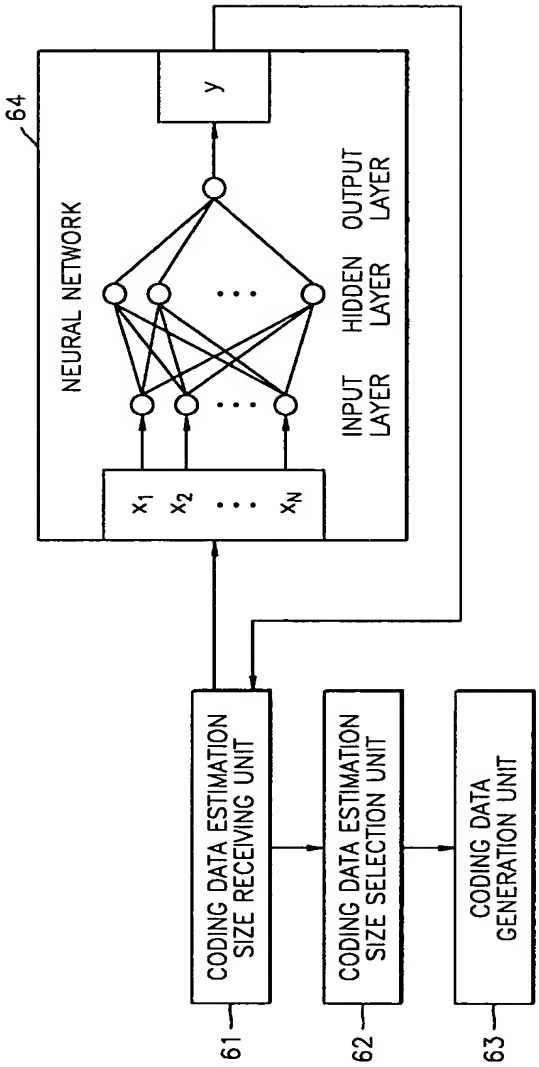

64
NEURAL NETWORK
y
OUTPUT LAYER
HIDDEN LAYER
INPUT LAYER
x_1 x_2 ... x_N
CODING DATA ESTIMATION SIZE RECEIVING UNIT
CODING DATA ESTIMATION SIZE SELECTION UNIT
CODING DATA GENERATION UNIT
61
62
63

FIG. 7

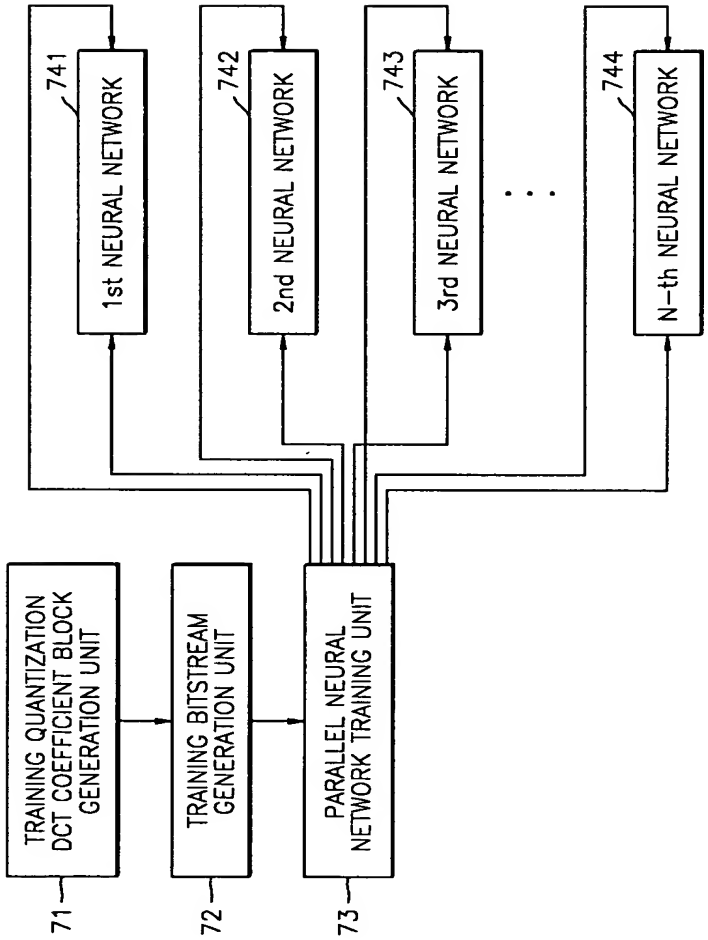

TRAINING QUANTIZATION DCT COEFFICIENT BLOCK GENERATION UNIT
71
TRAINING BITSTREAM GENERATION UNIT
72
PARALLEL NEURAL NETWORK TRAINING UNIT
73
741
1st NEURAL NETWORK
742
2nd NEURAL NETWORK
743
3rd NEURAL NETWORK
744
N-th NEURAL NETWORK

FIG. 8

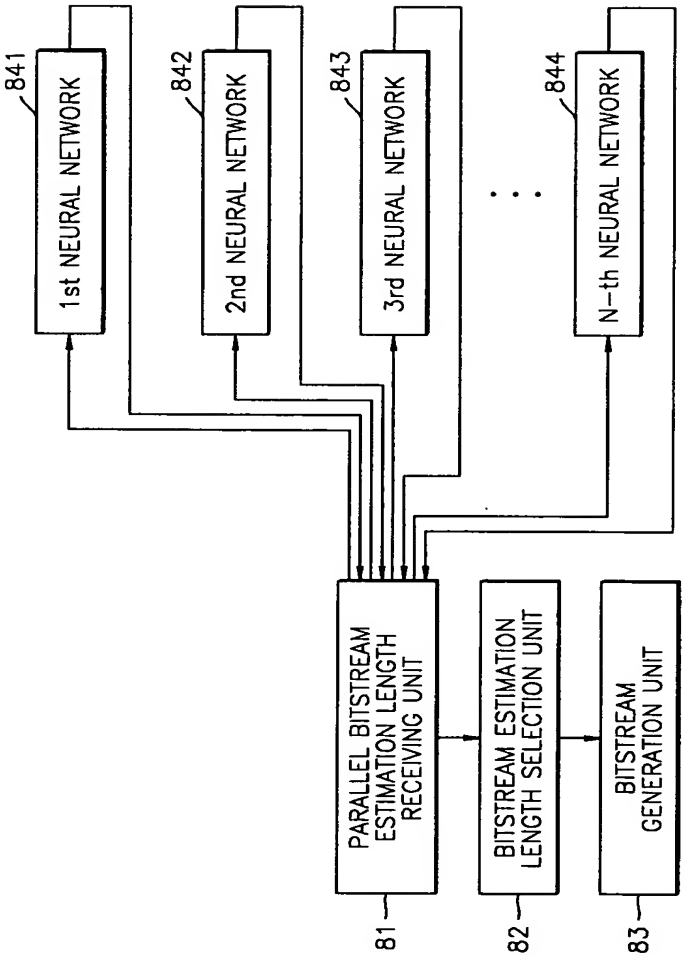

841
1st NEURAL NETWORK
842
2nd NEURAL NETWORK
843
3rd NEURAL NETWORK
844
N-th NEURAL NETWORK
PARALLEL BITSTREAM ESTIMATION LENGTH RECEIVING UNIT
BITSTREAM ESTIMATION LENGTH SELECTION UNIT
BITSTREAM GENERATION UNIT
81
82
83

FIG. 9

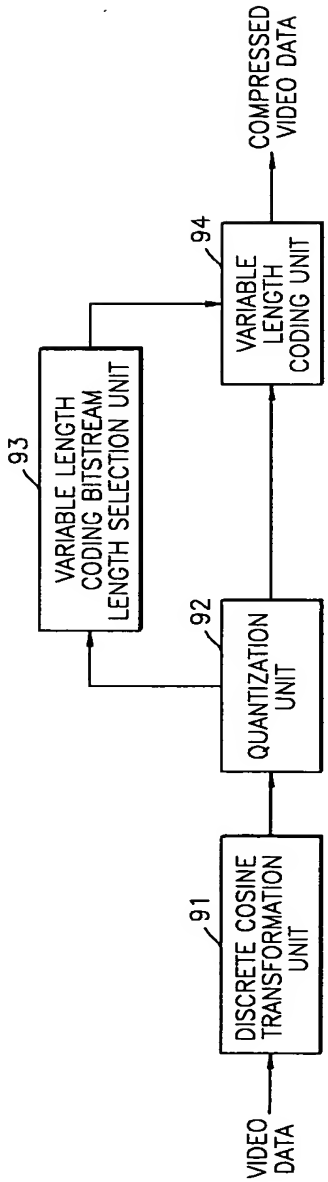

VIDEO DATA
91
DISCRETE COSINE TRANSFORMATION UNIT
92
QUANTIZATION UNIT
93
VARIABLE LENGTH CODING BITSTREAM LENGTH SELECTION UNIT
94
VARIABLE LENGTH CODING UNIT
COMPRESSED VIDEO DATA

FIG. 10

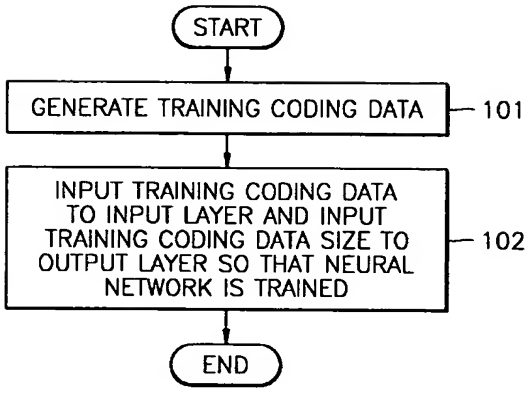

START
GENERATE TRAINING CODING DATA
101
INPUT TRAINING CODING DATA TO INPUT LAYER AND INPUT TRAINING CODING DATA SIZE TO OUTPUT LAYER SO THAT NEURAL NETWORK IS TRAINED
102
END

FIG. 11

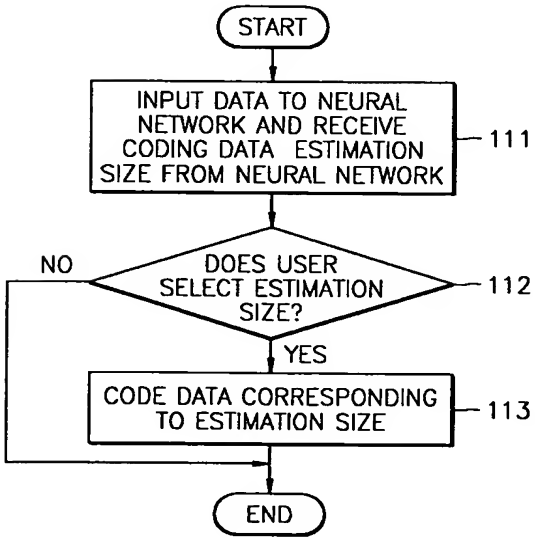

START
INPUT DATA TO NEURAL NETWORK AND RECEIVE CODING DATA ESTIMATION SIZE FROM NEURAL NETWORK
111
NO
DOES USER SELECT ESTIMATION SIZE?
112
YES
CODE DATA CORRESPONDING TO ESTIMATION SIZE
113
END

FIG. 12

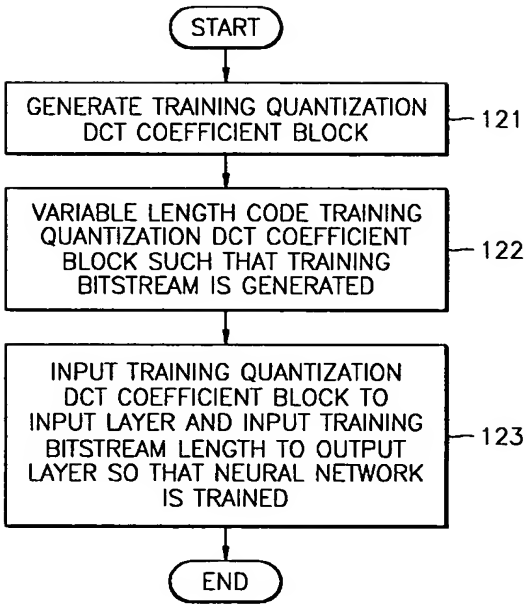

START
GENERATE TRAINING QUANTIZATION DCT COEFFICIENT BLOCK
121
VARIABLE LENGTH CODE TRAINING QUANTIZATION DCT COEFFICIENT BLOCK SUCH THAT TRAINING BITSTREAM IS GENERATED
122
INPUT TRAINING QUANTIZATION DCT COEFFICIENT BLOCK TO INPUT LAYER AND INPUT TRAINING BITSTREAM LENGTH TO OUTPUT LAYER SO THAT NEURAL NETWORK IS TRAINED
123
END

FIG. 13

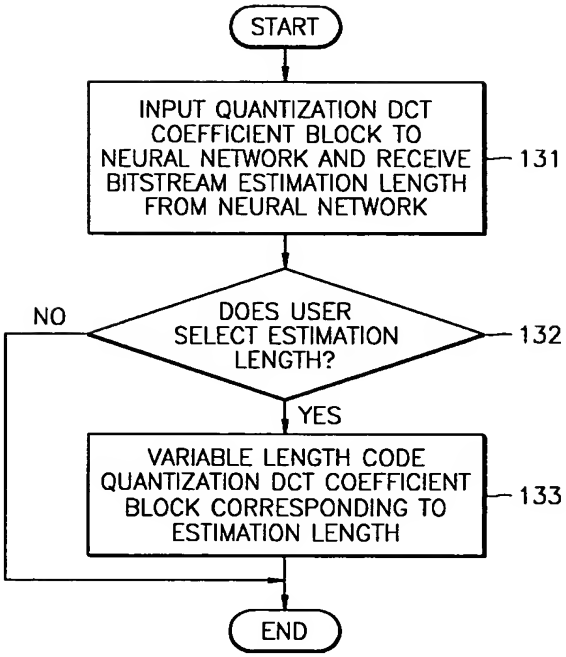

START
INPUT QUANTIZATION DCT COEFFICIENT BLOCK TO NEURAL NETWORK AND RECEIVE BITSTREAM ESTIMATION LENGTH FROM NEURAL NETWORK
131
DOES USER SELECT ESTIMATION LENGTH?
132
NO
YES
VARIABLE LENGTH CODE QUANTIZATION DCT COEFFICIENT BLOCK CORRESPONDING TO ESTIMATION LENGTH
133
END

FIG. 14

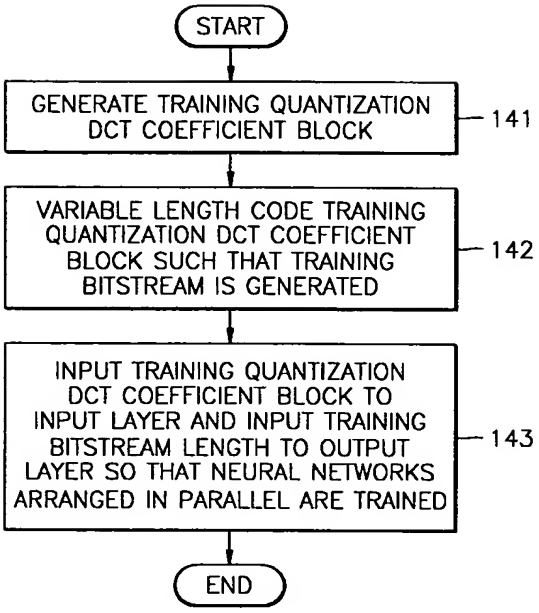

START
GENERATE TRAINING QUANTIZATION DCT COEFFICIENT BLOCK
141
VARIABLE LENGTH CODE TRAINING QUANTIZATION DCT COEFFICIENT BLOCK SUCH THAT TRAINING BITSTREAM IS GENERATED
142
INPUT TRAINING QUANTIZATION DCT COEFFICIENT BLOCK TO INPUT LAYER AND INPUT TRAINING BITSTREAM LENGTH TO OUTPUT LAYER SO THAT NEURAL NETWORKS ARRANGED IN PARALLEL ARE TRAINED
143
END

FIG. 15

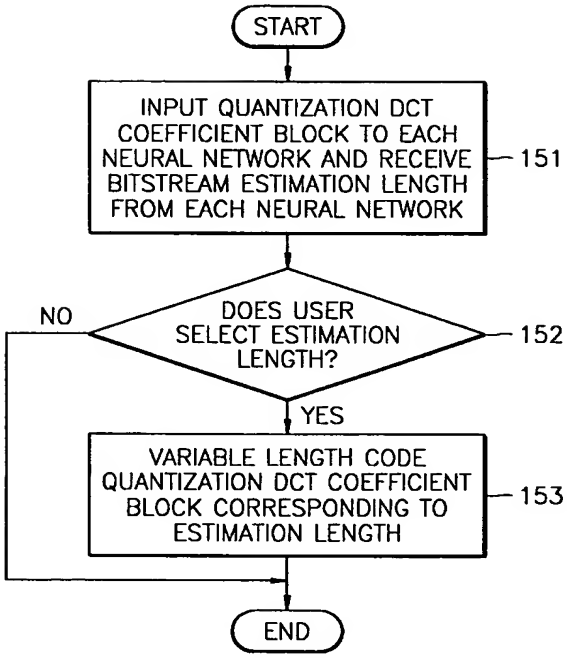
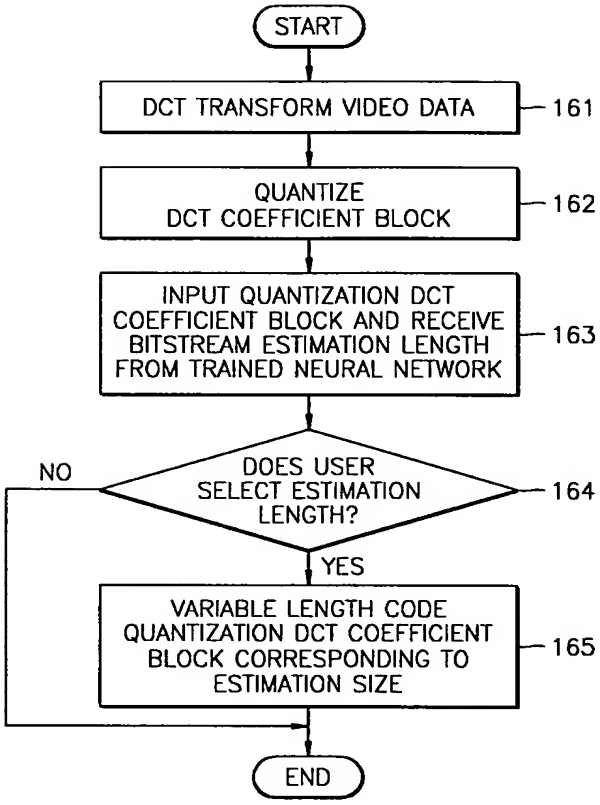

START
INPUT QUANTIZATION DCT COEFFICIENT BLOCK TO EACH NEURAL NETWORK AND RECEIVE BITSTREAM ESTIMATION LENGTH FROM EACH NEURAL NETWORK
151
DOES USER SELECT ESTIMATION LENGTH?
152
NO
YES
VARIABLE LENGTH CODE QUANTIZATION DCT COEFFICIENT BLOCK CORRESPONDING TO ESTIMATION LENGTH
153
END

FIG. 16


START
DCT TRANSFORM VIDEO DATA
161
QUANTIZE DCT COEFFICIENT BLOCK
162
INPUT QUANTIZATION DCT COEFFICIENT BLOCK AND RECEIVE BITSTREAM ESTIMATION LENGTH FROM TRAINED NEURAL NETWORK
163
DOES USER SELECT ESTIMATION LENGTH?
164
NO
YES
VARIABLE LENGTH CODE QUANTIZATION DCT COEFFICIENT BLOCK CORRESPONDING TO ESTIMATION SIZE
165
END